

The Project

Panarctic's Bent Horn project involves a two-phase development plan over 10 years. The company planned to first produce and transport by tanker to southern Canadian markets about 16 000 m³ of oil (100 000 barrels) per year for the first three years. In the second phase, it is expected this will be increased to about 50 000 m³ (300 000 barrels) per year for the remaining seven years.

Once the second phase is complete, the total capital expenditure on the development project will be about \$15 million, including the cost of a 3.2-km pipeline from the well site to storage tanks located next to Arnott Strait on the south side of Cameron Island.

Giving it the Go-ahead

In 1984, Panarctic Oils Ltd. submitted engineering and environmental studies, and applied for a production licence and approval of its development plan for the Bent Horn project.

The studies were reviewed by the Government of the Northwest Territories and several federal government agencies involved in the approvals process, including COGLA, the Department of Indian Affairs and Northern Development and the Canadian Coast Guard.

In early 1985, the federal government announced approval of the development plan and the Canada Benefits Plan for the Bent Horn project.

Transporting Arctic Oil

Panarctic used the *MV Arctic*, a 24 500 tonne Arctic class oil-bulk-ore carrier, for the first voyage of approximately 100 km to and from Bent Horn, through Zone 1, the most severe ice-infested zone in the Arctic.

The ship was equipped with specialized navigational technology to assist it through ice-covered waters. The crude oil was then transhipped to another tanker, the *Imperial Bedford* for the voyage south to Montreal. While in Zone 1, the voyage was under the control and escort of the Canadian Coast Guard icebreaker *Des Groseilliers*.

Panarctic plans to repeat the voyage each year during late August and early September when ice and sea conditions are best. The project is expected to expand in later years to include one or more additional summer voyages.

In 1985, the Bent Horn project set a precedent. Not only did this project demonstrate that oil can be produced in the High Arctic, but it has established that oil can be shipped safely to the south.

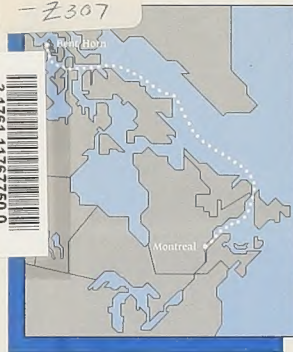
On the map, the Bent Horn project is on the southwestern tip of Cameron Island, northwest of Bathurst Island and northeast of Melville Island. Cameron Island is approximately 1300 km northeast of the Beaufort Sea and 150 km from the north magnetic pole. The island is about 60 km long and 50 km wide. Cameron Island is about 300 km northwest of Resolute Bay.

Bent Horn: Oil from the Top of the World

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Energy, Mines and
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Introduction

In the summer of 1955, the team of Geological Survey of Canada (GSC) geologists working on Operation Franklin, the largest expedition of its type in history, knew there was great potential for oil and gas under the Arctic Archipelago. The geology was similar to many other petroleum-producing regions of the world. The structures and formations were almost the same.

Thirty years later, in the summer of 1985, the predictions of the Geological Survey of Canada team — dubbed Operation Franklin in honour of the ill-fated search for the Northwest Passage by Sir John Franklin in 1847 — were proven right. A project called Bent Horn has become a symbol of the energy potential of Canada's High Arctic.

Bent Horn made history: it was the first project to produce oil in the Arctic Islands. Production from Bent Horn, which is located on Cameron Island, some 150 km from the north magnetic pole, became a reality after almost two years of planning and development.

As soon as weather and ice conditions permitted, the first 16 000 m³ (100 000 barrels) of crude oil from Bent Horn was loaded into the *MV Arctic* and shipped down the Labrador Coast to Montreal. Canadians proved that they could produce oil from the top of the world and ship it safely to southern markets.

Panarctic: A Leading Role

The Bent Horn oilfield, like most of the oil and gas resources in Canada's High Arctic, was discovered by Panarctic Oils Ltd. Panarctic, which is 54 per cent owned by Petro-Canada, is the only oil exploration company operating in the Canadian Arctic Islands today. The company has negotiated with the Canada Oil and Gas Lands Administration (COGLA) some 20 exploration agreements, allowing it to search for oil and gas.

During the course of an aggressive exploration program, Panarctic drilled the N-72 well in 1974 and discovered the Bent Horn field. Subsequently, four wells were drilled to delineate the find. One of these, Bent Horn A-02 drilled in 1976, is the well used for the current production project.



COGLA, which manages oil and gas activity on the frontier lands, has estimated that about 65 million cubic metres (408 million barrels) of oil out of a possible potential of 874 million cubic metres (5.5 billion barrels) have been discovered in the Arctic Islands. Another 405 billion cubic metres (14.3 trillion cubic feet) of gas have been discovered out of a potential of 3.1 trillion cubic metres (111 trillion cubic feet).

Compared with these figures, Bent Horn's first shipment of 16 000 m³ (100 000 barrels) of oil in the first year was modest, yet symbolic. The Bent Horn project demonstrated that oil can be shipped safely and efficiently from the High Arctic to southern markets during the short Arctic summer season.

Operation Franklin — Thirty Years Later

Exploration for oil and gas in the Arctic Islands began long before Panarctic arrived on the scene. In the summer of 1955, the 30-member Operation Franklin team from the Geological Survey undertook a massive geological expedition throughout the northern Arctic. The federal geological expedition, headed by Dr. Yves Fortier, spent more than four months in the Arctic mapping and surveying the region for the GSC.

Throughout the summer, they camped out and trekked across most of the islands in the Arctic — including Melville, Bathurst, Cornwallis, Devon, Ellesmere, Graham and Lough-see Islands.

One interesting geological area that the team explored was Cameron Island, one of the smaller land masses northeast of Melville Island. It was on the southwest tip of Cameron Island that one of Fortier's geologists, H.R. 'Hugo' Greiner, discovered a creek containing horns of the northern Caribou. Thus, Bent Horn Creek was officially named, and only later — in the early 1970s — became the site of Panarctic's exploration.

The largest single geological attempt to determine the oil and gas potential of the northern Arctic Archipelago ended with freeze-up in late September 1955. The Geological Survey continued to send geologists to the numerous islands in the region on several occasions, but never again mounted an expedition the magnitude of Operation Franklin.

The geological team assembled so much data and information that it took several years before preliminary maps were released, and it was not until 1963 that a major two-volume report was published.

On the basis of this report, Panarctic began its search for petroleum above the Arctic Circle.

